

# Some Notes for New Graduate Students

Compiled by Sean Smith (COSC MS advisor)  
sws@cs.dartmouth.edu

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Each year, when we give the new student orientation, I felt as if I'm bombarding the new students with massive amounts of detail they cannot possibly remember. Eventually, I figured I'd write it down—hence this document.

If you are reading this electronically, note that the table-of-contents below has hyperlinks.

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# 1 Academic Culture

## 1.1 Plagiarism and the Honor Code

Dartmouth takes academic integrity very seriously. In your written work, it is important that you:

1. cite all sources
2. if you've borrowed text from a source, make sure you typeset it as a quote (and then cite it)

We occasionally encounter new students with incorrect beliefs such as:

- *False*: “As long as you list the paper in your bibliography, you are free to cut and paste from it.”
- *False*: “If it's from *Wikipedia*, you are free to cut and paste from it.”
- *False*: “If it's from the professor's own work, then he or she will be flattered if you cut and paste from it.”

**Do not do any of this.** You can get into serious trouble, such as being suspended for a number of terms (which can then have visa implications for international students).

**REREAD THE PREVIOUS PARAGRAPH AND ASK ME IF YOU HAVE ANY QUESTIONS. THIS IS A SERIOUS MATTER.**

The only exception to the “no borrowing text” rule is if you are borrowing from your *own* prior publication—and even then, you need to make it very clear that's what you are doing, and get approval from the professor/editor/whomever you are writing for (since different venues have different standards about this).

**Desperate?** If you feel you are “in over your head” and fear failing a course, it is far better to talk to the professor involved—and/or to your program advisor—then to engage in academic misbehavior (such as copying solutions from another student or from somewhere on the Web, and then representing them as your own).

## 1.2 The Dartmouth Term

Dartmouth's “term” system often comes as a surprise to new students (and new faculty). We do in 10 weeks what other universities do in a full semester. On your end, you only take three courses at a time (instead of four or five)—but *things move quickly*. If you get behind, it can be very hard to get caught up again. Time management is very important.

One alum notes that, perhaps because of the Dartmouth term system, the college “doesn't do most of the holidays that other schools do, so classes are held on Columbus Day, President's Day, etc.”

Starting with Fall 2012, the college has adjusted its fall term schedule to start earlier in September and then finish before Thanksgiving (that's a US-based harvest-themed holiday in late November).

- If you hear people referring to “the new schedule,” this is what they're talking about.
- You may also hear people refer to the long break between fall and winter terms as *winterim*.

### 1.3 Finding things out at Dartmouth

Throughout your time at Dartmouth, you will have many questions. Often, the answers can be found online. Developing good search skills is important (particularly in our line of work). Some good places to start:

- the department: <http://www.cs.dartmouth.edu>
- the Graduate Office: <http://graduate.dartmouth.edu>
- the Registrar: <http://www.dartmouth.edu/~reg/>
- the college homepage: <http://www.dartmouth.edu>

### 1.4 Library

The Dartmouth library has many useful CS resources and journals available online—but, due to authentication magic, you usually have to come in through the library site or via VPN (see Section 2.3 below), rather than directly. For more information, contact our friendly library liaison, Katie Harding ([Katie.Harding@Dartmouth.edu](mailto:Katie.Harding@Dartmouth.edu)).

Also, a student commented:

The library will help you when performing the literature review portion of your thesis; they can help track down papers and find related work in databases you likely don't even know exist... really wish I'd known about that 2.5 years ago.

### 1.5 Lingo

Dartmouth folks may tend to use specialized codewords whose meaning may not be apparent to a newcomer. Some common ones:

- *The Upper Valley*: the region of Vermont and New Hampshire in which Dartmouth is located.
- *Kiewit*: the old name for the computing services group at Dartmouth
- *Thayer*: the engineering school
- *Tuck*: the business school
- *Geisel*: the new name for the medical school
- *DMS*: Dartmouth Medical School (the old name for Geisel)
- *DHMC*: Dartmouth-Hitchcock Medical Center (giant hospital nearby that does tertiary-care, research, and teaching)
- *ORC*: the Dartmouth course catalog
- *LSC*: the Life Sciences Center, new building on campus (with nice classrooms)
- *ISTS*: the Institute for Security, Technology, and Society (housed in the basement of Sudikoff)
- *Neukom*: the Neukom Institute for Computational Science (housed on the first floor of Sudikoff)
- *blitz*: email

### 1.6 “College”

Generally, people accustomed to using “college” to mean “undergraduate only” and “university” to mean “a college with graduate programs too” are surprised that we are Dartmouth *College*.

Yes, we do indeed have graduate programs—MS and PhD (primarily in science and engineering), as well as business and medical schools. However, it's called Dartmouth *College* because of a legal squabble in the early 1800s (and New Englanders tend to have long memories).

## 2 Electronic Culture

### 2.1 E-Mail

Dartmouth does much of its business by email.

- You will have a Dartmouth account (e.g., `Sean.W.Smith@dartmouth.edu`) (which is also occasionally reached via our “NetID” (see below) at `cloud.dartmouth.edu`). You may also receive a Computer Science account (e.g., `sws@cs.dartmouth.edu`). *People may send mail to either account, and assume you will read it.* Consequently, you **need to monitor both addresses**. Let me repeat that: **monitor both addresses**. I recommend picking one as your main account, and setting up the other one to forward to it.
- Check your email regularly. (Many times daily.)
- Be sure you can handle things such as attachments.
- Figure out how to organize your mail so that important things don’t get lost.

The Dartmouth-wide email system has its roots in then then-pioneering *Blitzmail* system built here back in the 1980s. Because of that origin, you will hear people use the term “blitz” for e-mail (both as a noun and a verb).

### 2.2 Authentication

You will likely end up with several forms of authentication in our systems.

- As of Fall 2012, Dartmouth IT rolled out a new “NetID” system—basically, a complicated username based on your college ID number, and a complicated password. This has become the standard way to authenticate to a large number of internal college-level services (such as Banner).
  - \* <http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/web-authentication-system>
- A userid and password within our CS Linux systems
- Inside CS, you can set yourself up with SSH keys and “SSH Agent,” so you can seldom need a password internally. Talk to our sysadmins for help here.

You may also hear about other forms:

- “DND” was a userid/password scheme previously used for many Dartmouth-wide services. This is being replaced by NetID.
- A Dartmouth-wide PKI certificate (and matching private key), which would let you access the Dartmouth Secure WLAN and transparently access restricted Web sites (such as Banner) without ever typing your password. Since using passwords for remote machines is generally not a good idea (because it requires giving away your secret each time you use it), this was really a nice, and Dartmouth was a leader here. Unfortunately, it appears to be being phased out.

### 2.3 Networks

You should be aware that Dartmouth has two different views of its computer networks:

- “Outside” (e.g., from off-campus, or from the “Dartmouth Public” WiFi)
- “Inside” (e.g., from a computer plugged into a Dartmouth LAN or connected to the “Dartmouth Secure” WiFi, or tunneled in from outside via VPN)

Many online resources are restricted to “insider” access only—so it would be good (before classes start) to figure out how to do this.

Some possibly useful links:

- How to get authorization to connect to the various internal Dartmouth wired and wireless networks: <http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/network-access-service-overview>
- VPN: <http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/virtual-private-network-vpn>

## 2.4 Computer Systems

Wayne and his staff take care of the computer systems in our department. You can reach them collectively at `sysadmin@cs`. It would be good to get to know them. If you have problems (“the printer in 007 doesn’t work”) or requirements (“I need libelf for my project”), talk to them!

Students and staff find the CS FAQ very useful:

- <https://wiki.cs.dartmouth.edu/faq/>

Also note that Wayne has much useful information about our department’s systems linked off his Web page

- <http://www.cs.dartmouth.edu/~wbc/>

but some of this is accessible from Dartmouth IP space only.

## 2.5 The Linux NFS

As a citizen of our department, you may also receive an account on our shared Linux system. This lets you log in to any of the department Linux systems, and gives you the same home directory one each (shared over NFS). Your directory is also backed up the sysadmins.

Once you have a Linux account, you also have (for free) a personal Web site. The directory `public.html` within your home directory will be visible outside as

- <http://www.cs.dartmouth.edu/~USERID/>
- and also as <https://www.cs.dartmouth.edu/~USERID/>

(where you replace “USERID” with your userid)

## 2.6 Connecting to Machines

In ancient times (when you could still trust everyone on the net), `telnet` was the standard tool for connecting to a remote machine, and `ftp` was the standard tool for moving files. However, these tools have significant security flaws:

- they send userid and password information in plaintext
- the rest of the data is also sent in plaintext

As a consequence, “best practice” has now shifted to `ssh` for connecting, and `sftp` or `scp` for transferring files.

It would be good to learn to use these tools (particularly since, due to the security concerns, many machines at Dartmouth no longer support `telnet/ftp`).

(Within the COSC Linux filesystem, you can find the current list of COSC machines and public key fingerprints at `/etc/ssh/ssh_known_hosts`.)

## 2.7 Electronic Culture

People in the department use a mix of Linux, Mac, and Windows systems (as well as few specialty ones). As a computer scientist, you should be comfortable using Linux and at least one of Mac or Windows, no matter what your “home” machine is.

## 2.8 Document Production

If you don't know it already, it would be good to learn how to produce documents with LaTeX, which is the standard (in CS and math) for professional typesetting. (I've been on program committees where reviewers laugh at papers submitted in Word.)

It would also be good to get comfortable producing technical drawings in a vector-graphics format (as opposed to bitmapped format).

## 2.9 Buying Computers

Dartmouth subsidizes a computer store, located in the basement of McNutt Hall.

- <http://computerstore.dartmouth.edu/>

## 3 Our Graduate Programs

Our department has three graduate programs:

- the PhD program
- the regular COSC MS program
- the Digital Arts MS program.

The COSC MS and the PhD programs are separate, in that students start out in one or in the other. (At some other universities, everyone starts out in the MS.) The PhD program has stricter admission requirements, as the college puts a strict limit on the number of PhD students we may admit—and also that it’s critical that PhD students not just be good computer scientists but also have strong potential for independent, long-term research.

However, once admitted, all the grad students (as well as upper-level undergrads) tend to take the same classes, work in the same labs, go to the same talks and social events, etc.

### 3.1 Qualifiers

“Qualifying exams” used to be a standard (and often feared) part of many PhD programs. Our program no longer has them.

### 3.2 The Digital Arts MS

Talk to Prof. Lorie Loeb for more details!

### 3.3 The Regular MS Program

The regular MS program has two tracks: coursework and thesis.

All students start out in the coursework track, and may petition to transfer over to the thesis track. If you’re interested in the thesis track, I recommend taking the following steps:

- Find a professor whose research interests you.
- Arrange to do a research credit with them.
- During the credit, figure out if research is something you really want to do, and...
- ...work really hard and impress the professor so that she/he will enthusiastically support your move into the thesis track.

### 3.4 Transferring from the Regular MS to PhD

It is possible for students in our regular MS program to transfer to the PhD program. (If you want to do this, then excel in your courses and impress faculty! If you’re in the coursework track, consider ways to demonstrate your research potential.)

In order to transfer, you have to apply to the PhD program the same as anyone else. If admitted, you may draw upon the non-research courses taken for your Dartmouth CS MS degree to fulfill PhD requirements.



### 3.5 Transferring from PhD to MS

It is possible for PhD students to apply to transfer to the regular MS program, but there are no guarantees. We will consider each application on a case-by-case basis. To help illustrate the situation, here are two hypothetical scenarios:

- 4th-year PhD student Alice has worked very hard, excelled at all her courses, passed her RPE and done excellent research. However, due to some sudden changes in her personal life, she is not able to stay to finish her PhD. Alice is likely to be granted admission to the MS program, with a tuition waiver.
- 1st-year PhD student Bob has poor grades and has not done well at research. Bob is not likely to be granted admission to the MS program. Even if he were granted admission (say, because his grades were better), he still would likely be charged full tuition.

## 4 Courses

Students take 3 credits a term, along with the no-credit colloquium course COSC210. Typically, one course is one credit (although advanced students may end up taking multiple research credits in a term, but still part of the three credits).

If you do the arithmetic, you may discover you will have far more slots for courses during your stay at Dartmouth than you have degree requirements. Thus, not every course you take needs to “count” for your degree. (And indeed, we expect that many students may end up taking additional courses as well as pre-requisite courses.)

### 4.1 Pre-Requisites

Our departmental web site has a directed acyclic graph showing the general pre-requisite chain:

- <http://web.cs.dartmouth.edu/graduate/courses>

### 4.2 Graduate Courses

Grad courses are numbered COSC100 and higher. Some upper-level undergraduate courses (e.g., COSC74) are cross-listed and co-taught with a graduate version (e.g., COSC174).

Courses numbered 295 and higher are special “placeholders” for TAing, research credits, etc; you should sign up for them only if you are actually doing that sort of thing (talk to the MS Advisor or PhD Advisor). Also, these *don't* count for your general course requirements.

COSC149, 169, 189, and 219 are “special topics” seminars. They usually are different each time they’re offered; you get credit for each different instance you take.

COSC294 is a “reading course.” If you want to study a special topic for which no formal course is offered, you can sign up for this—but only if you can convince a professor to supervise you. The department typically limits the number of such courses that can count for degree credit.

For non-Digital Arts M.S. students, CS courses 120-129 do not carry graduate credit.

**Placement Exams** The “second-level” graduate courses 231, 239, and 258 require that students either have strong performances in the corresponding undergrad course at Dartmouth, or explicitly demonstrate their preparedness (e.g., via an entrance exam). In 2017, the entrance exam for 231 will be given in November; the exams for 239 and 258 are suspended, as those courses will not be offered in academic year 2017-2018.

If you do not pass the exam, you will have to take the appropriate undergrad course. (Re-taking the exam next year is not permitted.)

### 4.3 Undergraduate Courses

Students in our standard MS program are allowed to take certain ugrad courses for graduate credit, within the framework of required courses for their degrees. According to my notes, this list is: 39, 55, 57, 58, 59, 60, 61, and 81

- Our general rule-of-thumb: an undergrad course should count only if there is no equivalent grad-level course.
- However, students in the standard MS program aren’t here as long, so we allow additional courses that have grad-level equivalents, but are sufficiently advanced that getting through the pre-req chain for the grad version may not be feasible within the MS timeframe.

A grad student registering for an undergrad course must use the paper form:

- [http://graduate.dartmouth.edu/sites/graduate\\_studies.dev/files/graduate\\_studies/course-change-form.pdf](http://graduate.dartmouth.edu/sites/graduate_studies.dev/files/graduate_studies/course-change-form.pdf)

Note that students taking undergraduate courses for graduate credit will need to complete additional work beyond that required for the undergrads. (So it's important to tell the professor that you're taking the course "for graduate credit.")

Undergraduate courses no longer count for PhD credit.

Again, if you want to take an undergrad course not on the list for your degree program and it makes sense for your education, you can still take it. It will count as one of the three courses necessary for a "full-time load" (which may be important for visa reasons). However, it will not count toward your degree.

#### 4.4 Courses in other Departments

You may also take courses in other departments (Math and Engineering are common choices). However, to count such a course against the requirements for your degree, you must petition our department *first*. (Typically, at most one such course can count for credit, MS or PhD.)

#### 4.5 "No-Credit" Seminars

**The Department Colloquium.** Our weekly colloquium is zero-credit (and no-grade) course, COSC210. All grad students are required to register for it (since that will ensure that we have a lecture room large enough)—and should also attend! (Note that the Registrar occasionally lists 210 has having credit, and then we need to correct that.)

**"Reading Groups."** Several groups within the department organize no-credit "reading groups" (what other departments call "journal clubs"). There's usually a "Theory Reading Group" and a "Security Reading Group," and there may be others as well.

#### 4.6 Registering for Courses

Paraphrasing from a Ph.D. student:

Log in to Banner:

- <http://www.dartmouth.edu/bannerstudent/>

Click on the "Add / Drop Course Selection- Fall Term 2013."

A few other notes: I think that we grad students need to be registered for a "full" course load in order to be considered full-time (and thus eligible for our health insurance). Shopping for classes is a good idea; you can add or drop them without trouble until the deadline (but DON'T forget to do it before the deadline).

In particular, as noted above to register for an undergrad class, you will need the form at

- [http://graduate.dartmouth.edu/sites/graduate\\_studies.dev/files/graduate\\_studies/course-change-form.pdf](http://graduate.dartmouth.edu/sites/graduate_studies.dev/files/graduate_studies/course-change-form.pdf)

## 4.7 Grades

Graduate courses within our department are graded as follows:

- HP (“high pass”)
- P (“pass”)
- LP (“low pass”)
- NC (“no credit”—that is, failing)

Getting an LP or NC will have ramifications for your academic standing; see the graduate handbook.

- <https://graduate.dartmouth.edu/policy/satisfactory-progress>

Note that, although you are only required to earn a “P” in courses, many professors take grades into account when deciding to take new students into their research programs.

Undergraduate COSC courses not taken for graduate credit—as well various courses outside the department—may be graded on a more traditional A-B-C-D-E scale. (Dartmouth uses “E” for failing, rather than “F.”)

Along with a course grade, a professors may also issue a “citation,” to acknowledge exceptional performance. However, these are rarely given.

## 4.8 Classrooms and Class Times

As you may have noticed, Sudikoff does not have very many classrooms—so many COSC courses end up being taught in other buildings, such as Kemeny/Haldeman and the LSC.

Also, Dartmouth has a class-period system that occasionally puzzles new students—see:

- [http://www.dartmouth.edu/~reg/calendar/new\\_class\\_schedule\\_graph.pdf](http://www.dartmouth.edu/~reg/calendar/new_class_schedule_graph.pdf)

## 4.9 Transferring Courses

**Transferring Courses from Elsewhere** If a particular course is required for your degree but you believe you have taken the equivalent already somewhere else, talk to the professor involved—the department may approve your taking a substitute course instead. The official policy:

- <http://web.cs.dartmouth.edu/sites/cs.dartmouth.edu/files/courseTransferPolicy.pdf>

**Transferring Courses from Dartmouth** Students who have taken suitable courses at Dartmouth as undergraduates may count some of them toward their graduate degrees, provided the courses were not counted for an undergraduate degree and some additional requirements are met. (Again, see the policy cited above.) If this option may apply to you, discuss it with your program advisor.

## 5 Student Life

### 5.1 Being a Computer Science Graduate Student

Prof. Lisa Fleischer offers these three pointers:

The first is someone’s view of what is important for a PhD in computer science. The second is what is important for a programming job in computer science. It is probably worthwhile to read them both. One thing I find interesting is that they both stress the importance of communication skills.

The third has a whole lot more links in this vein to be read at your convenience and interest.

I suggest you start with the third one to see the links here to all sorts of relevant topics.

- <http://www.cs.unc.edu/~azuma/hitch4.html>
- <http://www.joelonsoftware.com/articles/CollegeAdvice.html>
- <http://www.cs.cmu.edu/~jasonh/advice.html>

A Dartmouth alum who has gone onto grad school elsewhere also recommends:

- <http://pgbovine.net/PhD-memoir.htm>

### 5.2 Employment

Occasionally, grad students ask about working during the term.

- TA positions are almost always reserved for PhD students (although MS students may sometimes obtain grader/tutor jobs).
- RA positions can be available both to PhD and MS students. If you’re interested in such a position, I would advise accumulating many “high passes,” then going and talking to a professor you’re interested in working with. (Note that PhD students *must* have a research advisor anyway—but getting an RA stipend is optional.)
- If you’re receiving a TA or RA stipend, you cannot take additional employment.

If you’re not receiving a TA or RA stipend, you may take additional employment (*although we would caution you strongly against overcommitting yourself—particularly given the workload and fast pace of the Dartmouth academic term*). The International Office informs us of some limits: “F-1 student visa regulations permit part-time (20 hours/week) of on-campus employment during the academic term and full-time (40 hours/week) employment during vacation periods.” Also, it appears that F-1 visas only permit students to work *for a Dartmouth employer*.

**Summer Internships** Graduate students who wish to do an external CS-relevant internship as “practical training” can do so by registering for COSC295. You will need to consult with your program advisor (e.g., me, for MS students) for approval, beforehand, and file a short report at the end of the internship.

If an MS student does a summer internship via COSC295, he or she will not be charged tuition for that term; nor will that term count against the number of “tuition-waived” terms the student has.

### 5.3 Winter Clothes

Occasionally, new students from warmer climates ask where to buy winter clothes! Besides the few places in Hanover itself, you might try:

- Hubert's, in Lebanon
  - <http://www.huberts.com/locations/>
- Farm-Way, in Bradford VT (gives a discount for Dartmouth ID—but is a bit far, and also, being in Vermont, sometimes charges sales tax)
  - <http://www.vermontgear.com/vtstore.html>.
- Eastern Mountain Sports, at the Powerhouse Mall in Lebanon, occasionally has items on sale at a good price. LL Bean (also at Powerhouse) can also have good deals.
- For used clothes, the “Listen Center” in Lebanon and White River has good deals.
  - <http://www.listencommunityservices.org/>

### 5.4 Vegetarians

One former CS denizen from India advises me to warn vegetarian Indians: soups in the US are commonly made from broth based on chicken or beef.

### 5.5 Coffee Shops

One of our grad alumni observed that graduate school is not necessarily possible without coffee shops. Here in Hanover, we have several:

- The Dirt Cowboy, opposite the southwest corner of the Green.
- Umpleby's, between Main Street and the hardware store.
- The Dartmouth Bookstore has a branch of Starbucks embedded inside it; a new Starbucks has also opened on Main Street.
- Dartmouth has also opened a King Arthur franchise in the lobby of Baker Library
- Market Table and Morano Gelato both are reported to have nice espresso
- There's also a coffee shop embedded in the Tuck Business School.